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| Use the Van de Walle text and the TN Math Standards to complete this assignment. If other resources are used in addition, please cite with the URL or bibliographic information. |

**Chapter 21 – Developing Concepts of Data Analysis p. 526–556**

1. The process of meaningfully doing statistics includes the following 4 steps: (p. 529)
   1. \_
   2. \_
   3. \_
   4. \_
2. What are several ideas for students to create questions within and beyond the classroom? (p. 530)
3. It is particularly important that the context for statistical questions be culturally meaningful (p. 531). Why?
4. What difficulties do young students have collecting data and how can they be helped? (p. 532)

1. Define & give an example of categorical data (p. 532-533)
2. Define & give an example of numerical data (p. 533)
3. How can you help students take into consideration variability? (p. 533)
4. Create a pictograph using NCTM Illuminations Data Grapher <https://illuminations.nctm.org/Activity.aspx?id=4098>

Include a screenshot below:

1. Create a bar graph using NCES Kids’ Zone Create A Graph <https://nces.ed.gov/nceskids/createagraph/>

Include a screenshot below:

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| Kindergarten | K.MD.C.4 Sort a collection of objects into a given category, with 10 or less in each category. Compare the categories by group size. |
| 1st Grade | 1.MD.C.5 Organize, represent, and interpret data with up to three categories. Ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. |
| 2nd Grade | 2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.  2.MD.D.10 Draw a pictograph and a bar graph (with intervals of one) to represent a data set with up to four categories. Solve addition and subtraction problems related to the data in a graph. |
| 3rd Grade | 3.MD.B.3 Draw a scaled pictograph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled graphs.  3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units: whole numbers, halves, or quarters |
| 4th Grade | 4.MD.B.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection. |
| 5th Grade | 5.MD.B.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally. |

10. Use the standards table above and the textbook to list the grade level, describe, and give an example for each of the following:

(When searching for an example online for the examples, I suggest typing “elementary math \_\_\_”; for example “elementary math object graph”)

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|  | Grade Level | Description | Example |
| Object Graph  (p. 538) |  |  | BART207-MBP:private:var:folders:lj:1y9yx9vs60j9vrmjcv0ql3yrf47s7v:T:TemporaryItems:imgres.jpg |
| Picture Graph/ Pictograph  (p. 538) |  |  |  |
| Bar Graph  (p. 538) |  |  |  |
| Circle Graph/Pie Chart (p. 540) | 6 |  |  |
| Line Plot  (p. 541) |  |  |  |